

## CLAIMS

What is claimed is:

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1. An isolated DNA encoding a CD40-L polypeptide, wherein the DNA is selected from the group consisting of:

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(a) DNA comprising nucleotides 46 through 828, 196 through 828, 193 through 762, 403 through 828, or 403 through 762 of SEQ ID NO:11 and their complementary strands;

(b) DNA which hybridizes to one of the DNA molecules of (a) under stringent conditions (hybridization in 6 X SSC at 63°C overnight; washing in 3 X SSC at 55°C), and which encodes a polypeptide that binds to CD40; and

(c) DNA which, due to degeneracy of the genetic code, encodes a polypeptide encoded by any of the foregoing DNA sequences, wherein the polypeptide binds to CD40.

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2. The isolated DNA according to claim 1 encoding a soluble CD40-L polypeptide.

3. The isolated DNA according to claim 2 which further comprises a DNA encoding a leucine zipper peptide.

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4. The isolated DNA according to claim 3 wherein the leucine zipper peptide is a peptide having an amino acid sequence represented by SEQ ID NO:17.

5. The isolated DNA according to claim 4 which encodes a peptide having an amino acid sequence represented by SEQ ID NO:21.

6. The isolated DNA according to claim 2 which further comprises a DNA encoding an immunoglobulin Fc region.

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7. The isolated DNA sequence according to claim 6 wherein the Fc region is a human IgG<sub>1</sub> Fc region.

8. The isolated DNA according to claim 7 which encodes a peptide having an amino acid sequence as represented by amino acid 1 through 448 of SEQ ID NO:16.

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9. A recombinant expression vector comprising a DNA sequence according to claim 1.

10. A recombinant expression vector comprising a DNA sequence according to claim 2.

11. A recombinant expression vector comprising a DNA sequence according to claim 5.

12. A host cell transformed or transfected with an expression vector according to claim 9.
13. A host cell transformed or transfected with an expression vector according to claim 10.
14. A host cell transformed or transfected with an expression vector according to claim 11.
15. A process for preparing a CD40-L polypeptide, comprising culturing a host cell according to claim 13 under conditions promoting expression and recovering CD40-L polypeptide from the culture.
16. A process for preparing a CD40-L polypeptide, comprising culturing a host cell according to claim 14 under conditions promoting expression and recovering CD40-L polypeptide from the culture.
17. A purified CD40-L polypeptide that binds CD40 comprising a sequence of amino acids encoded by a nucleotide sequence according to claim 1.
18. The purified CD40-L polypeptide according to claim 17, wherein the CD40-L is a soluble CD40-L.
19. The soluble CD40-L according to claim 18, wherein the soluble CD40-L comprises amino acids 51 through 261 of SEQ ID NO:11.
20. The soluble CD40-L according to claim 19 wherein the CD40-L is an oligomer comprising two or more CD40-L extracellular regions.
21. The soluble CD40-L according to claim 20 having an amino acid sequence represented by SEQ ID NO:21
22. A method of treating allergy, an allergic reaction, lupus, rheumatoid arthritis or graft versus host disease comprising administering an effective amount of a CD40 antagonist selected from the group consisting of a soluble CD40 protein, a CD40 fusion protein, a soluble monomeric CD40-L polypeptide, and combinations thereof.
23. A method of augmenting a vaccine response with an adjuvant, wherein the adjuvant is selected from the group consisting of a membrane-bound CD40-L polypeptide, oligomeric soluble CD40-L polypeptides, and combinations thereof.

24. A method for stimulating hybridoma cells to increase monoclonal antibody secretion, comprising administering an effective amount of a CD40 agonist selected from the group consisting of CD40-L, membrane-bound CD40-L and oligomeric CD40-L.

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25. An antibody immunoreactive with CD40-L or a CD40-L immunogen.

26. An antibody according to claim 25 which is a monoclonal antibody.

10 27. An isolated oligonucleotide comprising an oligonucleotide of at least about 12 nucleotides of SEQ ID NO:11 or its complement, which hybridizes to a DNA according to claim 1 under moderately stringent conditions (50°C, 5 X SSC).